Contents

NUMBER 1, MARCH 1989

M. L. GUPTA, R. H. MACMILLAN, T. A. MCMAHON and D. W. BENNETT. A simulation model to predict the drying time for pasture hay 1

D. J. MOWAT and M. A. SHAKEEL. The effect of different cultivars of white clover on numbers of and damage by some invertebrate 11

R. E. MUCK. Initial bacterial numbers on lucerne prior to ensiling 19

E. L. JONES and J. E. ROBERTS. Sward maintenance of *Lolium multiflorum* by slurry seeding 27

A. HOPKINS, P. J. MURRAY and W. M. PATEFIELD. A comparison of the herbage productivity of *Bromus wildenowii* cv. Grasslands Matua with four cultivars of *Lolium perenne* when grown in association with *Trifolium repens* 31

K. OSORO and MERCEDES CEBRIAN. Digestibility of energy and gross energy intake in fresh pastures 41

S. A. GRANT, D.A. ELSTON and G. T. BARTHRAM. Problems of estimating tissue turnover in grass swards in the presence of grazing animals 47

J. R. WILSON, M. N. McLEOD and D. J. MINSON. Particle size reduction of the leaves of a tropical and a temperate grass by cattle. I. Effect of chewing during eating and varying times of digestion 55

J. R. WILSON, D. E. AKIN, M. N. McLEOD and D.M. MINSON. Particle size reduction of the leaves of a tropical and a temperate grass by cattle. II. Relation of anatomical structure to the process of leaf breakdown through chewing during eating and digestion 65

J. L. WHEELER and J. L. CORBETT. Criteria for breeding forages of improved feeding value: results of a Delphi survey 77

R. J. HAGGER, S. P. ISAAC and C. J. STANDELL. Modifying growth patterns of nine grasses with mefluidide (Research Note) 85

ANNE RANGELY. The suitability of plant tissue tests to indicate phosphorus deficiency in perennial ryegrass (*Lolium perenne* L.) (Research Note) 91

D. R. FENLON and J. WILSON. The relationship between spoilage and *Listeria monocytogenes* contamination in bagged and wrapped big bale silage. (Research Note) 97

J. L. HOLECHEK, R. E. ESTELL, M. L. GALYEAN and W. RICHARDS. Chemical composition, *in vitro* digestibility and *in vitro* VFA concentrations of New Mexico native forages (Research Note) 101

J. L. WHEELER and P. J. VICKERY. Variation in HCN potential among cultivars of white clover (*Trifolium repens* L.) (Research Note) 107

ROSEMARY P. COLLINS and I. RHODES. Yield of white clover populations in mixture with contrasting perennial ryegrasses (Research Note) 110

NUMBER 2, JUNE 1989

D. J. MOWAT and M. A. SHAKEEL. The effect of some invertebrate species on persistence of white clover in ryegrass swards 117

M. J. HILL. Growth of *Trifolium repens* L. and *Trifolium semipilosum* Fres. var. *glabrescens* Gillet at different temperatures in controlled environments and in the field 125

J. J. J. WILTSHIRE, P. D. HEBBLETHWAITE, R. E. ESSLEMONT and D. A. McGILLOWAY. The use of growth regulator RSWO411 in seed crops of *Lolium perenne* L. 139

M. A. SANDERSON and W. F. WEDIN. Nitrogen concentrations in the cell wall and lignocellulose of smooth bromegrass herbage 151

M. A. SANDERSON and W. F. WEDIN. Nitrogen in the detergent fibre fractions of temperate legumes and grasses 159

F. J. GORDON. An evaluation through lactating cattle of a bacterial inoculant as an additive for grass silage 169

A. H. MARSHALL, P. A. HOLLINGTON and D. H. HIDES. Effect of seed crop management on the potential seed yield of contrasting white clover varieties. I. Inflorescence production 181

P. A. HOLLINGTON, A. H. MARSHALL and D. H. HIDES. Effect of seed crop management on the potential seed yield of contrasting white clover varieties. II. Seed yield components and potential seed yield 189

N. THOMPSON, P. R. KEILLER and C. W. YATES. Predicting the digestibility of grass grown for first-cut silage 195

J. R. B. TALLOWIN, F. TCACENCO, M. PATEFIELD and S. K. E. BROOKMAN. A correction for the influence of changes in lamina weight per unit length in grasses on measurements of the weight of lamina removed by grazing 205

D. A. DAVIES, M. FOTHERGILL and D. JONES. Frequency of stocking rate adjustments required on contrasting upland perennial ryegrass pastures continuously grazed to a sward height criterion from May to July 213

A. M. VAN VUUREN, K. BERGSMA, F. FROL-KRAMER and J. A. C. VAN BEERS. Effect of addition of cell wall degrading enzymes on the chemical composition and the *in sacco* degradation of grass silage 223

M. O. HUMPHREYS. Water-soluble carbohydrate in perennial ryegrass breeding. I. Genetic differences among cultivars and hybrid progeny grown as spaced plants 231

M. O. HUMPHREYS. Water-soluble carbohydrates in perennial ryegrass breeding. II. Cultivar and hybrid progeny performance in cut plots 237

C. C. BELL and I. M. RITCHIE. The effect of frequency and intensity of defoliation on the production and persistence of 'Grasslands Matua' prairie grass (Research Note) 245

NUMBER 3, SEPTEMBER 1989

A. S. LAIDLAW and R. W. J. STEEN. Turnover of grass laminae and white clover leaves in mixed swards continuously grazed with steers at a high- and low-N fertilizer level 249

I. A. WRIGHT and T. K. WHYTE. Effects of sward surface height on the performance of continuously stocked spring-calving beef cows and their calves 259

J. FRAME. Herbage productivity of a range of grass species under a silage cutting regime with high fertilizer nitrogen application 267

D. A. KLESSA, J. FRAME, R. D. GOLIGHTLY and R. D. HARKESS. The effect of fertilizer sulphur on grass production for silage 277

H. D. BLACKBURN and M. M. KOTHMANN. A forage dynamics model for use in range or pasture environments 283

C. T. DOUGHERTY, N. W. BRADLEY, P. L. CORNELIUS and L. M. LAURIAULT. Short-term fasts and the ingestive behaviour of grazing cattle 295

R. H. ARMSTRONG, T. G. COMMON and G. J. DAVIES. The prediction of the *in vivo* digestibility of the diet of sheep and cattle grazing indigenous hill plant communities by *in vitro* digestion, faecal nitrogen concentration or indigestible acid-detergent fibre 303

M. J. GIBB, R. D. BAKER and ANNA M. E. SAYER. The impact of grazing severity on perennial ryegrass/white clover swards stocked continuously with beef cattle 315

M. J. GIBB and R. D. BAKER. Effect of changing grazing severity on the composition of perennial ryegrass/white clover swards stocked with beef cattle 329

C. T. DOUGHERTY, N. W. BRADLEY, P. L. CORNELIUS and L. M. LAURIAULT. Ingestive behaviour of beef cattle offered different forms of lucerne (*Medicago sativa* L.) 335

J. R. B. TALLOWIN and S. K. E. BROOKMAN. The use of irradiation for the preservation of fresh herbage for subsequent botanical and chemical analysis (Research Note) 343

R. CABALLERO. Yields and chemical composition of whole-crop field beans and their components during pod-filling (Research Note) 347

F. J. GORDON. A further study on the evaluation through lactating cattle of a bacterial inoculant as an additive for grass silage (Research Note) 353

BOOK REVIEW 359

NUMBER 4, DECEMBER 1989

R. ANDERSON, H. I. GRACEY, S. J. KENNEDY, E. F. UNSWORTH and R. W. J. STEEN. Evaluation studies in the development of a commercial bacterial inoculant as an additive for grass silage. 1. Using pilot-scale tower silos 361

S. J. KENNEDY, H. I. GRACEY, E. F. UNSWORTH, R. W. J. STEEN and R. ANDERSON. Evaluation studies in the development of a commercial bacterial inoculant as an additive for grass silage. 2. Responses in finishing cattle 371

R. W. J. STEEN, E. F. UNSWORTH, H. I. GRACEY, S. J. KENNEDY, R. ANDERSON and D. J. KILPATRICK. Evaluation studies in the development of a commercial bacterial inoculant as an additive for grass silage. 3. Responses in growing cattle and interaction with protein supplementation 381

G. MOSELEY and V. RAMANATHAN. The effect of dry feed additives on the nutritive value of silage 391

D. J. ROBERTS. A comparison of buffer and partial storage feeding of a straw/concentrate mixture to grazing dairy cows 399

R. K. M. HAY. The performance of high-latitude grass varieties under Scottish conditions: seasonal distribution of dry-matter production 405

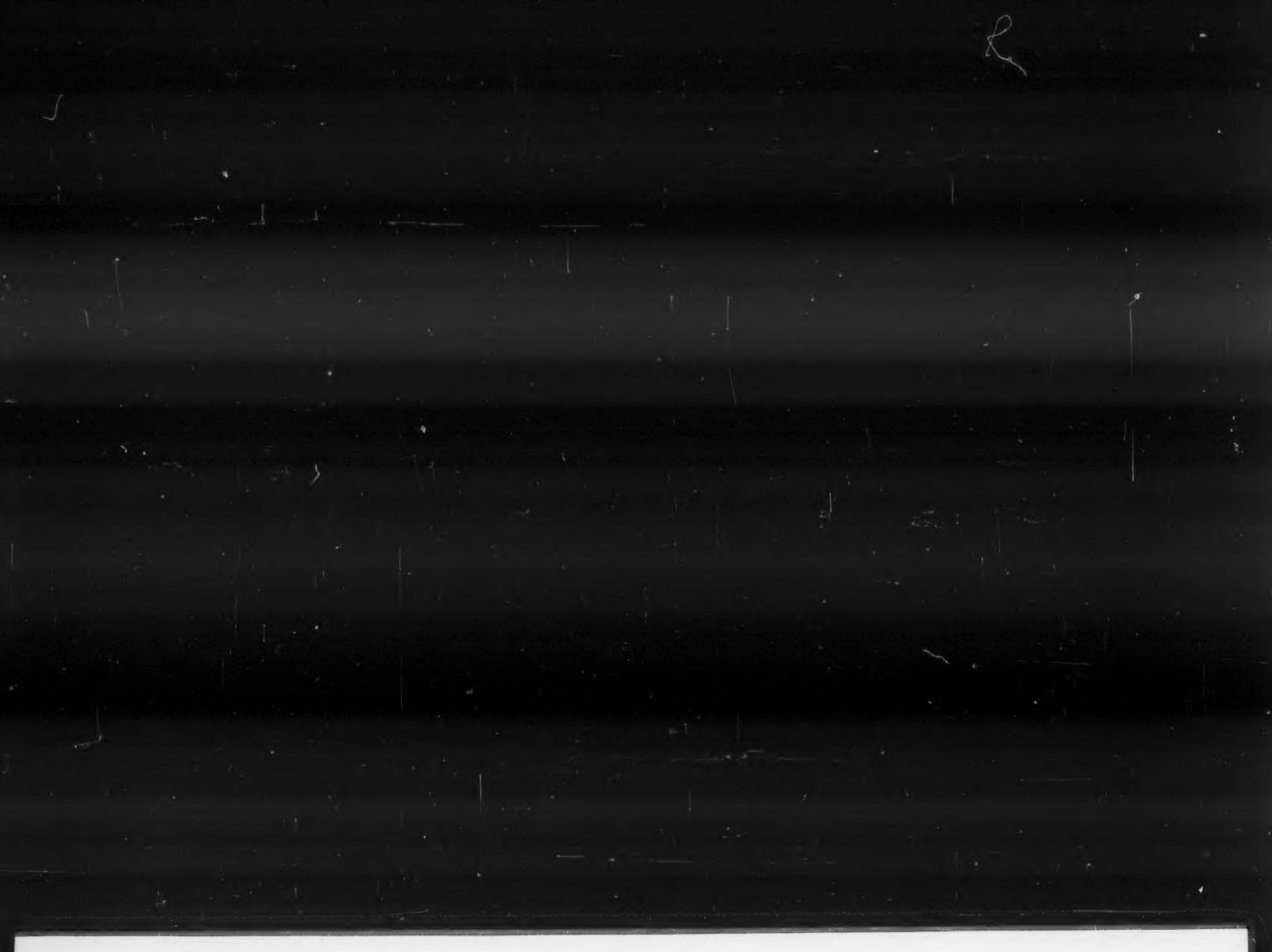
B. GONZALEZ, J. BOUCAUD, J. SALETTE, J. LANGLOIS and M. DUYME. Changes in stubble carbohydrate content during regrowth of defoliated perennial ryegrass (*Lolium perenne* L.) on two nitrogen levels 411

G. C. LEWIS. Factors influencing the effects of fungicide treatment on seedling emergence of perennial ryegrass (*Lolium perenne*) 417

M. O. HUMPHREYS. Water-soluble carbohydrates in perennial ryegrass breeding. III. Relationships with herbage production, digestibility and crude protein content 423

D. A. DAVIES, M. FOTHERGILL and D. JONES. Assessment of contrasting perennial ryegrasses, with and without white clover, under continuous sheep stocking in the

uplands. 1. Animal production from the grass varieties 431

D.A. DAVIES, M. FOTHERGILL and D. JONES. Assessment of contrasting perennial ryegrasses, with and without white clover, under continuous sheep stocking in the uplands. 2. The value of white clover for lamb production 441

Author index for Volume 44 451